

REMARKS

Applicants sincerely appreciate the detailed examination evidenced by the Final Official Action mailed August 11, 2003, wherein the Examiner rejected the pending claims under 35 USC § 112, second paragraph. The Examiner also objected to Claims 1, 21, and 24 over the recitation of a "channel region" recited in the preambles of the respective claim.

As discussed hereinbelow in greater detail, Applicants have amended the pending claims to further clarify the recitations thereof. For example, Applicants have renamed the channel region an "**implant region**." Furthermore, the preambles of the independent claims have been amended to recite forming a "plurality of channel regions" as suggested by the Examiner. Applicants respectfully request entry of the present Amendment After Final as no new issues have been raised as Applicants have amended the claims in response to the suggestions of the Examiner as set out in the Final Official Action.

Amended Independent Claims 1, 21, and 24 Comply with 35 USC § 112

Claims 1, 3, 17-20 and 21-24 stand rejected under 35 USC § 112, second paragraph (*Final Official Action, page 2*). In particular, the Final Official Action has rejected Claims 1, 21, and 24 over the recitation of "between adjacent isolation regions associated with the plurality of gate electrodes from the single channel region." In response, Applicants have amended independent Claims 1, 21, and 24 to further clarify the formation of the "channel region" recited therein. For example, independent Claim 21 has been amended to recite in-part:

forming a mask on the isolation region that extends onto a portion of the substrate adjacent to the isolation region to provide a shielded portion of the substrate adjacent to the isolation region and an exposed portion of the substrate spaced apart from the isolation region having the shielded portion therebetween, the exposed portion of the substrate comprising a first portion where a gate electrode will be subsequently formed and a second portion where a bit line contact will be subsequently formed, the mask exposing only the first and second portions;

implanting ions into the exposed portion of the substrate using the mask as an implant mask, thereby forming **an implant** region in only the first and second portions to adjust the threshold voltage of a transistor;

forming a plurality of gate electrodes on the **implant** region;
and
implanting ions using the plurality of gate electrodes as an
implant mask to form source/drain regions associated with the plurality
of gate electrodes and to define separate channel regions from the
implant region, **wherein the separate channel regions** are self-
aligned to the plurality of gate electrodes.

Independent Claims 21 and 24 have been similarly amended. As shown above,
Applicants have amended the independent claims to rename the channel region as an
"implant region." For example, independent claim 1 now recites in part "implanting
ions into the exposed portion of the substrate using the mask as an implant mask,
thereby forming **an implant region**." Amended independent Claim 1 further recites:
implanting ions . . . to form source/drain regions . . . and to define separate channel
regions from the implant region, wherein the separate channel regions are self-aligned
to the plurality of gate electrodes to further highlight that the channel region is formed
along with the source/drain regions as suggested by the Examiner.

Therefore, in some embodiments according to the invention as shown, for
example, in Figure 5 of the application, ions 120 are implanted to form the implant
region 122 in the substrate 100. As shown in Figure 6, the plurality of gate electrodes
are formed on the substrate over the implant region 122 and, according to Figure 7,
another ion implant 140 is performed to form source drain regions 142a,b which also
defines separate channel regions from the implant region 122. For example, as shown
in Figure 7, the plurality of gate electrodes located between the isolation regions 102
on the left-hand portion of Figure 7 have associated source/drain regions 142a,b. As
is further shown in Figure 7, the implant region 122 has been separated for define two
separate channel regions between the source/drain regions formed by the ion
implantation 140. Accordingly, Applicants respectfully submit that amended
independent Claims 1, 21, and 24 satisfy all paragraphs of 35 USC § 112 and,
therefore, respectfully request withdrawal of all rejections.

The Objections to the Claims have been Overcome by the Present Amendment

Claims 1, 21, and 24 have been objected to over the recitation of "a channel
region" in the preambles thereof. In response, Applicants have amended the

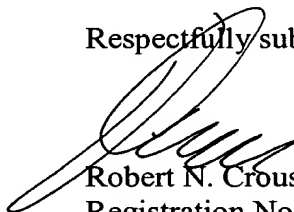
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preambles of independent Claims 1, 21, and 24 to recite in-part "forming a plurality of channel regions" as suggested by the Examiner. Accordingly, the amendments to independent Claims 1, 21, and 24 have overcome the objections thereto, which are respectfully requested to be withdrawn.

CONCLUSION

Applicants have amended independent Claims 1, 21, and 24 as suggested by the Examiner. Accordingly, the pending claims comply with 35 USC § 112. Applicants respectfully request entry of the present Amendment After Final as no new issues have been raised. Accordingly, Applicants respectfully request allowance of all claims in due course. If any informal matters arise, the Examiner is encouraged to contact the undersigned by telephone at (919) 854-1400.

Respectfully submitted,




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Audra Wooten